

Attorney Docket No. 06618-414001  
Serial No. 09/496,137  
Amendment dated March 24, 2004  
Reply to Office Action dated December 24, 2003

Amendment to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (Original) A method of producing a shape, comprising:  
using a virtual reality environment in which positions of a user's hand are tracked; and

forming a three-dimensional modeled surface by adding  
shapes defined by hand movements at each of a plurality of  
intervals.

2. (Currently amended) ~~A method as in claim 1~~ A method of  
producing a shape, comprising:

using a virtual reality environment in which positions of a  
user's hand are tracked;

forming a three-dimensional modeled surface by adding  
shapes defined by hand movements at each of a plurality of  
intervals; and

wherein an inside surface of the hand is used to form the modeled surface, by tracking movement of a tangent to the hand, to define a tangent plane of a surface being created.

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3. (Original) A method as in claim 2 wherein said using comprises tracking hand movement is tracked via a tracker and glove.

4. (Currently amended) A method as in claim 1 further comprising using an ~~incrementally~~ incremental technique to take an existing mesh of samples and changing it to add a new sample.

B1  
CMT  
5. (Currently amended) ~~A method as in claim 4~~ A method of producing a shape, comprising:  
using a virtual reality environment in which positions of a user's hand are tracked;

forming a three-dimensional modeled surface by adding shapes defined by hand movements at each of a plurality of intervals;

using an incremental technique to take an existing mesh of samples and changing it to add a new sample; and

wherein said technique comprises finding a neighborhood of samples, identifying a surface region, removing identified parts, and creating new parts to replace the identified parts, where the new parts take a new sample into account.

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6. (Currently amended) ~~A method as in claim 5 wherein~~  
~~said~~ A method as in claim 5 wherein said technique utilizes a  
projective plane to determine how the new parts should be  
formed.

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7. (Currently amended) ~~A method as in claim 1~~ A method  
of producing a shape, comprising:  
using a virtual reality environment in which positions of a  
user's hand are tracked;  
forming a three-dimensional modeled surface by adding  
shapes defined by hand movements at each of a plurality of  
intervals;

wherein the surface is selected as a normal to the surface  
of the hand.

8. (Original) A method as in claim 1 further comprising  
defining a first hand position which defines a starting position  
and a second hand position which defines a stopping of drawing.

9. (Original) A method as in claim 1 further comprising  
defining a hand position which forms an eraser tool.

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10. (Original) A method as in claim 1 further comprising modifying the drawing using one of a plurality of props.

11. (Original) A method as in claim 10 wherein said props are tongs which can be squeezed and moved to rotate the shape.

12. (Original) A method as in claim 10 wherein said prop is a spherical ball.

13. (Original) A method as in claim 10 wherein said prop is a sponge which alters a look of the shape.

14. (Original) A method as in claim 13 wherein said altering is by smoothing.

15. (Original) A method of producing a shape, comprising:  
tracking a position of a user's hand; and  
forming a three-dimensional modeled surface based on said position of said user's hand at different times.

16. (Currently amended) A method as in claim ~~16~~ 15, wherein said forming comprises using the hand to create 3d-strokes of shape.

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17. (Currently amended) A method as in claim ~~16~~ 15,  
wherein said using comprises using the bend of the hand to  
define the curvature of 3d-strokes.

18. (Currently amended) ~~A method as in claim 16,~~ A method  
of producing a shape, comprising:

tracking a position of a user's hand;

forming a three-dimensional modeled surface based on said  
position of said user's hand at different times;

wherein said forming comprises using the hand to create 3d-  
strokes of shape;

further comprising displaying a trace of the path of the  
hand,

sensing at least 7 of the hand's degrees of freedom for the  
purposes of shape creation, said degrees of freedom including  
the hand's position and orientation in space, along with degrees  
of freedom that are affected by the hand's posture.

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19. (Currently amended) ~~A method as in claim 16~~ A method of producing a shape, comprising:

tracking a position of a user's hand;

forming a three-dimensional modeled surface based on said position of said user's hand at different times;

wherein said forming comprises using the hand to create 3d-strokes of shape; and

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further comprising merging samples from one hand position to an existing shape.

20. (Currently amended) ~~A method as in claim 16~~ A method of producing a shape, comprising:

tracking a position of a user's hand;

forming a three-dimensional modeled surface based on said position of said user's hand at different times;

wherein said forming comprises using the hand to create 3d-strokes of shape; and

wherein said samples are added by deprojecting a shape, removing parts, adding new parts, and reprojecting said shape.

21. (Currently amended) A method as in claim ~~16~~ 15 further comprising using hand postures to switch between different modes of operation.

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22. (Currently amended) A method as in claim ~~16~~ 15  
wherein a first hand posture comprises a start to track posture.

23. (Currently amended) A method as in claim ~~16~~ 15  
wherein a second hand posture comprises a stop track posture.

24. (Currently amended) A method as in claim ~~16~~ 15,  
further comprising displaying different tools at the hand's  
position based on different postures.

25. (Currently amended) A method as in claim ~~16~~ 15  
further comprising using the finger to draw a narrower stroke.

26. (Original) A three dimensional drawing device,  
comprising:

a hand tracking element, which tracks three dimensional  
positions and hand shapes of an operator's hand in a virtual  
reality environment in which positions of a user's hand are  
tracked; and

forming a three-dimensional modeled surface by adding  
shapes defined by hand movements at each of a plurality of  
intervals.

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27. (Original) A shape drawing system, comprising:  
a user interface which operates to command shapes to be created; and  
a processing element which incrementally adds surface regions to an extant surface.

28. (Original) A system as in claim 27, wherein said user interface tracks hand movements.

29. (Original) A method of drawing on a computer, comprising:  
displaying a first shape on the computer;  
using the hand to define a new shape, to be added to said first shape;  
using said new shape to apply deformations to said first shape; and  
displaying said first shape as deformed by said new shape.

30. (Currently amended) A method as in claim 29, wherein a portion of the first shape moves toward the hand.



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31. (Original) A system of 3d shape-creation, comprising:  
monitoring hand posture;  
obtaining continuous variables that continuously vary  
between a maximum value and a minimum value based on said hand  
posture; and  
using said variables to define a shape.

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